| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 10/518,485 | 12/20/2004 | Jean-Claude Dulac | 0528-1135 | 5524 |

| | |
|---|---|
| 466        7590        12/27/2006<br>YOUNG & THOMPSON<br>745 SOUTH 23RD STREET<br>2ND FLOOR<br>ARLINGTON, VA 22202 | EXAMINER<br>KUNDU, SUJOY K |

| ART UNIT | PAPER NUMBER |
|---|---|
| 2863 | |

| SHORTENED STATUTORY PERIOD OF RESPONSE | MAIL DATE | DELIVERY MODE |
|---|---|---|
| 3 MONTHS | 12/27/2006 | PAPER |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

PTOL-90A (Rev. 10/06)

| | Application No. | Applicant(s) |
|---|---|---|
| **Office Action Summary** | 10/518,485 | DULAC ET AL. |
| | Examiner | Art Unit | |
| | Sujoy K. Kundu | 2863 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1) ☐ Responsive to communication(s) filed on _____.
2a) ☐ This action is **FINAL**.   2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4) ☒ Claim(s) *1-18* is/are pending in the application.
    4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) *1-18* is/are rejected.
7) ☒ Claim(s) *2* is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.
    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
    a)☒ All   b)☐ Some *  c)☐ None of:
      1.☐ Certified copies of the priority documents have been received.
      2.☐ Certified copies of the priority documents have been received in Application No. _____.
      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
    * See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date *12/20/2004*.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Claim Objections*

Claim 2 is inconsistent with respect to lettering – "the surface properties of step

3);" should be step c) instead.

### *Claim Rejections - 35 USC § 101*

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of
> matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the
> conditions and requirements of this title.

Claims 9-10 are rejected under 35 U.S.C. 101 because the claimed invention is

directed to non-statutory subject matter.

The claims are drawn to a computer program per se. A computer program per

se are abstract instructions. Therefore, a computer program is not a physical thing

(product) nor a process as they are not "acts" being performed. As such, these claims

are not directed to one of the statutory categories of invention (See MPEP 2106.01), but

are directed to nonstatutory functional descriptive material.

It is noted that computer programs embodied on a computer readable medium or

other structure, which would permit the functionality of the program to be realized, would

be directed to a product and be within a statutory category of invention, so long as the

computer readable medium is not disclosed as non-statutory subject matter per se

(signals or carrier waves).

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-4 are rejected under 35 U.S.C. 102(b) as being anticipated by Hildebrand (5,615,171).

With regards to Claim 1, 7, 16-18, Hildebrand teaches a process for smoothing a subsurface property in a geological structure represented by seismic measurements, in which there is constructed a continuous function $S_{ij, k}(t)$ by interpolation or approximation of the discrete seismic traces of a multi-dimensional seismic matrix, said function $S_{ij, k}(t)$ being designed as a "continuous local seismic trace", comprising the following steps:

a). using a optimum offset of two adjacent continuous local seismic traces $S_{ij, k}(t)$ and $S_{pq, k}(t)$, the value of offset rendering maximum their correlation function, this optimum offset not necessarily being a whole number multiple of the vertical sampling interval (Figure 1-8, 8, Tables I-V, Column 6, Line 31- Column 11, Line 45);

b). using as conditional neighborhood of a central continuous local seismic trace $S_{ij, k}(t)$ the sub-neighborhood consisting of adjacent traces $S_{pq, k}(t)$ corresponding to optimum offsets associated with correlations $R_{ij, pq,k}(h)$ greater than a predetermined threshold comprised between 0 and 1 (Figure 1-8, 8, Tables I-V, Column 6, Line 31- Column 11, Line 45);

c). selecting a property of a subsurface to be smoothed in the conditional neighborhood of a point (i, j, k) of a reference "central" continuous local seismic trace (Figure 1-8, 8, Tables I-V, Column 6, Line 31- Column 11, Line 45);

d). offsetting the subsurface properties of the conditional neighborhood by

translating the current variable of the value of optimum offset $h_{ij, pq, k}$(Figure 1-8, 8,

Tables I-V, Column 6, Line 31- Column 11, Line 45);

e) taking as the smoothed value of the point (i, j, k) an average of the subsurface

properties offset in step d) (Figure 1-8, 8, Tables I-V, Column 6, Line 31- Column 11,

Line 45).

With regards to Claim 2, Hildebrand teaches the process in which the average of

the surface properties of step 3) is a weighted average, for example by the value of

maximum correlation corresponding to the optimum offset (Column 10, Lines 5-23).

With regards to Claim 3, 11, Hildebrand teaches the process according to claim 1

or 2, in which the average of the subsurface properties of step e) is selected from the

following set: arithmetic average, geometric average, harmonic average, weighted or

not (Column 10, Lines 5-23).

With regards to Claim 4, Hildebrand teaches the process in which there is

selected as the subsurface property to be smoothed, the amplitude reflected and

detected by geophones (Column 1, Lines 15-62).

With regards to Claim 5, 14, Hildebrand teaches the process in which the

process of smoothing is repeated by applying to the result a prior smoothing (Figure 1-

8, 8, Tables I-V, Column 6, Line 31- Column 11, Line 45).

With regards to Claim 6, 8, 15, Hildebrand teaches the process in which a multi-

dimensional matrix of smoothed property is visualized on a visualization screen

(Abstract, "display", Figure 1-8, 8, Tables I-V, Column 6, Line 31- Column 11, Line 45).

With regards to Claim 9-10, Hildebrand teaches a computer software package, comprising elements of program code to execute the steps of the process when said program is executed by a computer (Column 2, Lines 11-25).
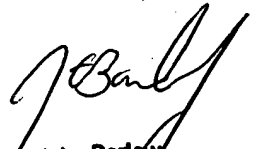
### *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sujoy K. Kundu whose telephone number is 571-272-8586. The examiner can normally be reached on M-F 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Barlow can be reached on 571-272-2269. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

SKK

12/13/2006

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